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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,339	01/28/2004	Shane Elwart	FGT 3C7 (81090700)	5227
36865 7590 06/08/2011 ALLEMAN HALL MCCOY RUSSELL & TUTTLE, LLP 806 S.W. BROADWAY, SUITE 600 PORTLAND, OR 97205				
EXAMINER				
JOHNSON, EDWARD M				
ART UNIT		PAPER NUMBER		
1736				
MAIL DATE		DELIVERY MODE		
06/08/2011		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

1                                   RECORD OF ORAL HEARING  
2                                   UNITED STATES PATENT AND TRADEMARK OFFICE

3                                   \_\_\_\_\_  
4                                   BEFORE THE BOARD OF PATENT APPEALS  
5                                   AND INTERFERENCES  
6                                   \_\_\_\_\_

7  
8                                   *Ex Parte* SHANE ELWART, GOPICHANDRA SURNILLA,  
9                                   and JOSEPH R. THEIS

10                                   \_\_\_\_\_  
11                                   Appeal 2010-006081  
12                                   Application 10/767,339  
13                                   Technology Center 1700  
14                                   \_\_\_\_\_

15                                   Oral Hearing Held: Wednesday, April 13, 2011  
16                                   \_\_\_\_\_

17  
18                                   Before ADRIENE L. HANLON, PETER F. KRATZ and LINDA M.  
19                                   GAUDETTE, Administrative Patent Judges  
20

21                                   ON BEHALF OF THE APPELLANT:

22                                   JOHN RUSSELL, ESQ.  
23                                   Alleman, Hall, McCoy,  
24                                   Russell & Tuttle, LLP  
25                                   806 S. W. Broadway, Suite 600  
26                                   Portland, Oregon 97205

1                   *The above-entitled matter came on for hearing on Wednesday,*  
2                   *April 13, 2011, commencing at 9:05 a.m., at the U.S. Patent and Trademark*  
3                   *Office, 600 Dulany Street, 9th Floor, Alexandria, Virginia, before Jon*  
4                   *Hundley, Notary Public.*

5  
6                   THE CLERK: Good morning. Calendar No. 12, Appeal No.  
7                   2010-006081. Mr. Russell.

8                   JUDGE HANLON: Thank you.

9                   Good morning, Mr. Russell.

10                  MR. RUSSELL: Good morning.

11                  JUDGE HANLON: Before you begin, do you have a business  
12                  card that you could give to our court reporter?

13                  MR. RUSSELL: Let me see if I do.

14                  JUDGE HANLON: And if you don't, you can just give him the  
15                  information at the end of the argument.

16                  MR. RUSSELL: Yes. I don't know if I grabbed one. I don't,  
17                  but I can --

18                  JUDGE HANLON: Okay. You can give it to him after you're  
19                  done.

20                  MR. RUSSELL: Okay.

21                  JUDGE HANLON: That's great. Thank you.

22                  So you have 20 minutes and you may begin when you're ready.

23                  MR. RUSSELL: Thank you.

24                  So good morning. My name is John Russell, representing Ford  
25                  Global Technologies in this appeal. I'm sure you're familiar with the brief,  
26                  so I'll just get started with the introduction, and feel free to ask questions  
27                  whenever they come up.

28                  The invention in this application relates to treating engine  
29                  exhaust emissions of a motor vehicle. The engine in the car burns fuel, and  
30                  that fuel a lot of times has sulfur in it.

31                  And certain catalytic converters for treating exhaust emissions  
32                  can be poisoned by the sulfur that comes through into the exhaust, and can

1 get stored on the catalyst and block the active sites that are used for treating  
2 other emissions, like NOX, NOX emissions.

3 And so the system can operate to increase the exhaust  
4 temperature to try to remove these sulfur compounds that are blocking the  
5 sites on the catalyst.

6 And sometimes during that removal process, hydrogen sulfide  
7 is formed, H<sub>2</sub>S. And that is the rotten egg smell that you may have  
8 sometimes smelled in your exhaust.

9 What our application focuses on is how to operate the system to  
10 remove the sulfur deposits while trying to avoid emitting that formation of  
11 hydrogen sulfide into the atmosphere.

12 And the sort of important recognition that the inventors had  
13 here relates to understanding that at different temperatures, different sets of  
14 reactions in the exhaust can be used to remove the sulfur without emitting  
15 hydrogen sulfide by adjusting the reactants, the oxidants and reductants, and  
16 how long those are sent to the catalyst at different temperatures.

17 So that the sulfur removal operation can take place over a wider  
18 range, without emitting the hydrogen sulfide.

19 And so Claim 1, as I'm sure you've seen, sets forth one example  
20 of the independent claims, and sort of the last element of Claim 1 talks about  
21 adjusting the air fuel ratio.

22 So that's the amount of oxidants and reductants relative to each  
23 other in the exhaust, based on the temperature, where that adjustment varies  
24 either in Claim 1, the lean duration or the rich duration, to affect those  
25 adsorbing and reacting steps to get rid of the sulfur without forming the  
26 hydrogen sulfide.

27 And "lean" means excess oxygen relative to stoichiometry.  
28 "Rich" is excess reductants relative to stoichiometry.

29 So any questions on that sort of background information?  
30 (No response.)

31 MR. RUSSELL: Okay. Good.

1               So the primary reference applied to all of the independent  
2 claims is Bartley. And it's applied in the obviousness context.

3               And as we explained, the first point here is that the reference  
4 admittedly doesn't adjust any of the lean or rich duration based on  
5 temperature.

6               And the reactions are explained there. It goes through them in  
7 great detail. It shows how it changes where the exhaust flow goes under  
8 different conditions, but it doesn't say anything about temperature in terms  
9 of how you would adjust those oxidants' reactants, or that it would even be  
10 possible to get different reactions to occur under different temperatures that  
11 will still remove the sulfur without emitting the hydrogen sulfide.

12              It goes one approach basically; one set of reactions, one way to  
13 operate to get those reactions.

14              The standing rejection admits it doesn't have that, and then just  
15 sort of says: Well, it would be obvious to change the air/fuel ratio.

16              And our first point is that: Well, even if it was obvious to  
17 change the air/fuel ratio, based on some condition, it doesn't say that you  
18 would do it based on the temperature. And it doesn't say you would change  
19 the particular parameter of how long either the lean or the rich operation  
20 should be performed, based on temperature.

21              And the Examiner's answer doesn't really ever make any  
22 assertion that that feature, which is in Claim 1, would be obvious. There's  
23 no evidence to even understand why that would be obvious.

24              It just says: Well, it's obvious to adjust the air/fuel ratio. But it  
25 doesn't say anything about temperature.

26              JUDGE GAUDETTE: Isn't the Examiner saying that the  
27 adjustment is inherently based on temperature change?

28              MR. RUSSELL: Well, maybe. I didn't see them say that in the  
29 record.

30              JUDGE GAUDETTE: But he's saying that a temperature  
31 change will occur.

1 MR. RUSSELL: But even if temperatures change, as they, of  
2 course, always do, the Claim says that the air/fuel ratio is adjusted based on  
3 that; not just that temperatures change. Temperatures always are changing.

4 Even if a temperature inherently changes, which I didn't see that  
5 in the record, it still doesn't say anything about the active steps of the method  
6 that change the air/fuel ratio, based on the temperature, so that you can  
7 change the length of the lean or rich durations.

8 JUDGE KRATZ: So this air/fuel ratio, I was a little confused  
9 by the claim language, because I presume what you're talking about is the  
10 engine operation, the air/fuel going to the engine --

11 MR. RUSSELL: Right --

12 JUDGE KRATZ: As opposed to the emissions stream. But  
13 you recite it differently.

14 MR. RUSSELL: Well, there's different ways to change the  
15 exhaust air/fuel ratio.

16 In our application, we change it by changing the air and the fuel  
17 that are combusted in the combustion chamber of the engine.

18 Bartley, the reference, changes the exhaust air/fuel ratio by just  
19 literally injecting reductant into the exhaust.

20 I think it's numbers 19 and 18 in Bartley.

21 And so we haven't argued that Bartley doesn't, you know,  
22 somehow change the exhaust air/fuel ratio, that it's not really our main point.

23 I don't remember if there was a dependent claim in our  
24 application that talked about changing the combustion air/fuel ratio; but our  
25 position is that doesn't really matter.

26 JUDGE KRATZ: That doesn't, okay.

27 JUDGE HANLON: It's the fact that whether it's changed,  
28 based on the temperature.

29 MR. RUSSELL: The duration. The duration changed based on  
30 temperature, yes. So how lean and how rich.

31 And if you look in our application, what we explain is that as  
32 the temperatures change, there are sometimes where you want a long lean

1 and a short rich. And then under different temperatures to get different  
2 reactions to get the result that we want, you might have a long rich and a  
3 short lean.

4 So they can change around.

5 And that's really the key recognition in our application  
6 compared to the prior art, is they give just this -- there's one way. Figure 3  
7 goes through, you know, one set of reactions.

8 There's only one way that they operate, and you achieve them in  
9 one way by just switching a valve, or you change the flow to these different  
10 catalysts, and control this reductant injector.

11 We've recognized that different temperatures can support  
12 different sets of reactions. And to get those reactions to work, we can do  
13 that by changing how long we go lean or go rich.

14 And if you didn't understand that the different reactions could  
15 be used at different temperatures to get the same result that you want, you  
16 would have no reason to even think that you would change how long you  
17 run lean or long you run rich.

18 You know, even if you said, "Well, all chemistry, you know, is  
19 based on temperature, and therefore I should at least consider temperature,"  
20 usually the way it works is you say:

21 "Well, to get the reactions in the prior art, you know, I need to  
22 be at a temperature at which those will work. And if I'm not, then I wouldn't  
23 try to do it."

24 So that was my main point on Claim 1. If there aren't any other  
25 questions on Claim 1, I can move to Claim 5.

26 JUDGE HANLON: Okay.

27 MR. RUSSELL: Okay.

28 So Claim 5 is one example that gives a little more detail as to  
29 the particular reactions that are being carried out. And in our application,  
30 also in Claim 1 -- but it's more detailed in Claim 5 -- we've recognized that  
31 these different reactions work in the case of a metal oxide catalyst.

1                   So you can see in Claim 1, we specifically tied the method to a  
2 metal oxide catalyst.

3                   And Claim 5, which also depends from Claim 3, and then 2 to  
4 1, specifies a certain way that the reaction of the hydrogen sulfide is carried  
5 out.

6                   And if you want to follow along with Figure 3 in the prior art, I  
7 think that's instructive, because I don't know about you -- I'm not a chemistry  
8 major, and all these sulfates, sulfites and sulfides get a little confusing to me.

9                   So I had to write them out. But I think I can go through it in a  
10 pretty straightforward way on Claim 5.

11                   The thing is to remember, so back to Claim 1 -- because 5 refers  
12 to 3 to 2, back to 1 -- the reacting of the hydrogen sulfide is sort of where the  
13 claim starts. And that's H<sub>2</sub>S is the hydrogen sulfide.

14                   And so if you're looking at Figure 3, it's important to  
15 understand that Figure 3 in the prior art has sort of three stages:

16                   It starts out lean would be basically steps 30 to 42; then at 44  
17 the reductant is turned on, and so now we go rich. So basically 44 to 56 is  
18 rich. Then we go back to lean, because we've turned off the reductant at 56.  
19 And so 58 through 62 are lean.

20                   And you'll see that in the first lean portion, there's no hydrogen  
21 sulfide that's formed yet. The hydrogen sulfide gets formed when you  
22 remove the sulfates and sulfites from the first trap, which is number 16 in  
23 Bartley.

24                   So you don't ever have any hydrogen sulfide until you get to  
25 Step 46.

26                   And so looking back to 5, what it says is that: "Further  
27 comprising reacting the nickel sulfide with an oxidant to form nickel sulfate.  
28 And the nickel sulfide in 5 refers to the nickel sulfide that is formed from  
29 reacting hydrogen sulfide with the reductant in Claim 3.

30                   And so we did not argue Claim 3, because, in my opinion, Step  
31 50 matches up with the portion of Claim 3. You're reacting hydrogen sulfide



1 with the metal oxide. So in our case, that's nickel sulfide. Nickel sulfide in  
2 our application would be the metal, the Mo.

3 And so you can see that in Claim 5, you have to react nickel  
4 sulfide with an oxidant to form nickel sulfate. And the metal sulfate in the  
5 reference that's formed at Step 50 is stored in the second trap; and then it's  
6 reacted with the oxidant at 58.

7 So you can see the MS gets reacted with the oxidant at 58,  
8 because you have to be lean to have the oxidant to react with it.

9 And there it forms directly the sulfur dioxide, without forming  
10 any nickel sulfate.

11 The reason this is different than ours is, first of all, our claim  
12 says "reacting nickel sulfide with an oxidant to form nickel sulfate."

13 And the Examiner says, "Well, you're just forming intermediate  
14 compounds, and therefore it doesn't matter."

15 But it's not an intermediate compound. The reference doesn't  
16 form it. And it doesn't because the way that they're doing the reactants is  
17 they go rich to form the metal sulfide, and then lean to oxidize it.

18 In our application, we go lean to form the sulfate, and then go  
19 rich to react it as the last step.

20 So when ours goes rich-lean-rich, here they're going basically  
21 lean-rich-lean.

22 And so they don't show that reaction, and they couldn't because  
23 of the way theirs is working.

24 And the Examiner starts pointing to the things that happen  
25 beforehand, and it's just not what it shows.

26 JUDGE KRATZ: I understand your position.

27 MR. RUSSELL: Okay.

28 Any questions at all?

29 JUDGE HANLON: I think we understand your position.

30 MR. RUSSELL: No? Okay. Well, thank you very much for  
31 your time. I appreciate it.

32 JUDGE HANLON: Thank you.

Appeal 2010-006081  
Application 10/767,339

1 (Whereupon, at 9:21 a.m., the proceedings were concluded.)  
2 \* \* \* \* \*